

optical material in a reducing atmosphere with a **positive pressure**” (emphasis added). Independent claim 9 recites a “method of making an enhanced photosensitive fiber” that includes, *inter alia*, the step of “making a preform using modified chemical vapor deposition wherein the preform is collapsed in a reducing atmosphere with a **positive pressure**” (emphasis added).

Matsumura fails to teach or suggest a method that includes collapsing successive layers of optical material (claim 1) or a preform (claim 9) in a reducing atmosphere with a **positive pressure**.” In contrast to the present invention, Matsumura discloses the use of “**vacuum**” (emphasis added) during collapsing of the preform (column 7, lines 8-12 and column 13, lines 61-65). A vacuum is not a positive pressure, but instead is a negative pressure.

Regarding the Examiner’s assertion that Matsumura’s vacuum (negative pressure) can be interpreted to be the same as Applicant’s positive pressure, Applicants note that in interpreting a claim term the Examiner may only use the broadest **reasonable** interpretation supported by the specification. See *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997) The broadest reasonable interpretation of the claims must be consistent with the interpretation that those skilled in the art would reach. See *In re Cortright*, 165 F.3d 1353, 1359 (Fed. Cir. 1999); see also MPEP 2111 and 2111.01.

Nothing in Applicant’s disclosure suggests that a vacuum can be considered a positive pressure. Indeed, to one of ordinary skill in the art, a vacuum is **negative** pressure. The plain meaning of the word vacuum is “below atmospheric pressure.” See the enclosed dictionary definition of vacuum. Although, the Examiner is allowed to give claim terms a broad interpretation, the interpretation must be reasonable. In the present case, it is not reasonable to expand the definition of vacuum (a negative pressure) to include positive pressures.

On pages 2 and 3 of the Office Action, the Examiner presents calculations purportedly to show that Matsumura teaches the use of pressures that fall within ranges recited in certain claims. Applicants note that Matsumura teaches the use of a vacuum (negative pressure relative to atmospheric pressure) while the present claims require a positive pressure (i.e., above atmospheric pressure). In particular, Matsumura teaches the use of absolute pressures

of, for example, 0.2 and 0.37 torr. Applicants, however, claim positive pressure of 0 to 1.0 torr, 0 to 0.5 torr, and 0.2 to 0.4 torr, i.e., the equivalent of absolute pressures of 760 to 761 torr, 760 to 760.5 torr, and 760.2 to 760.4 torr at standard altitude and weather conditions (atmospheric pressure is generally 760 torr, although this may vary depending on altitude and weather conditions). Thus, the pressure range taught by Matsumura is not the same as the claimed pressure range.

Because Matsumura teaches the use of negative pressure rather than positive pressure, it does not anticipate claims 1 and 9. Further, because there is no suggestion in Matsumura to use positive pressure, Matsumura does not render claims 1 and 9 obvious. Consequently, independent claims 1 and 9 are patentable over Matsumura. Their dependent claims are patentable for at least the same reasons.

In the Office Action, claims 1-5 and 7-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,165,224 ("Irven"). Applicants respectfully traverse this rejection, for at least the following reasons.

Independent claim 1 recites a "method of making a preform for an enhanced photosensitive fiber" that includes, *inter alia*, the step of "collapsing the successive layers of optical material in a **reducing** atmosphere with a positive pressure" (emphasis added). Independent claim 9 recites a "method of making an enhanced photosensitive fiber" that includes, *inter alia*, the step of "making a preform using modified chemical vapor deposition wherein the preform is collapsed in a **reducing** atmosphere with a positive pressure" (emphasis added).

Irven does not teach or suggest "collapsing the successive layers of optical material in a **reducing** atmosphere with a positive pressure." In fact, Irven explicitly teaches collapse with a gas mixture containing oxygen (column 2, line 17). Further, Irven teaches the use of sufficient oxygen to form excess germanium monoxide to drive the equilibrium volatilization reaction into reverse to suppress the loss of germania (column 3, lines 2-7). That is, Irven teaches collapse using an **oxidizing** atmosphere. Therefore, Irven teaches away from the presently claimed invention and does not render it obvious.

Consequently, independent claims 1 and 9 are patentable over Irven. Their dependent claims are patentable for at least the same reasons.

Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsumura or Irven as applied to claims 1-5 and 7-12, and further in view of U.S. Patent No. 4,465,707 (“Fanucci”). Applicants respectfully traverse this rejection.

Even assuming, *arguendo*, that Fanucci provides the teaching suggested by the Examiner, Fanucci fails to remedy the deficiencies of Matsumura and Irven explained above with regard to claim 1. As claim 6 depends from claim 1, it is patentable over Matsumura or Irven and Fanucci for at least this reason.

Claims 13 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsumura or Irven as applied to claims 1-5 and 7-12, and further in view of U.S. Patent No. 6,201,917 (“Campion”). Applicants respectfully traverse this rejection.

Even assuming, *arguendo*, that Campion provides the teaching suggested by the Examiner, Campion fails to remedy the deficiencies of Matsumura and Irven explained above with regard to claim 9. As claims 13 and 14 depend from claim 9, they are patentable over Matsumura or Irven and Campion for at least this reason.

Claims 15 and 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsumura or Irven as applied to claims 1-5 and 7-12, and further in view of U.S. Patent No. 5,763,081 (“Ohga”). Applicants respectfully traverse this rejection.

Even assuming, *arguendo*, that Ohga provides the teaching suggested by the Examiner, Ohga fails to remedy the deficiencies of Matsumura and Irven explained above with regard to claim 9. As claims 15 and 16 depend from claim 9, they are patentable over Matsumura or Irven and Ohga for at least this reason.

Claims 17-24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsumura or Irven as applied to claims 1-5 and 7-12, and further in view of U.S. Patent 5,745,615 (“Atkins”). Applicants respectfully traverse this rejection.

Claim 17 recites a “method of making a fiber grating” that includes, *inter alia*, the step of providing an enhanced photosensitive fiber made according to claim 9.” Claim 9 recites a method of making an enhanced photosensitive fiber that includes the step of

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“making a preform using modified chemical vapor deposition wherein the preform is collapsed in a reducing atmosphere with a positive pressure.”

As explained above in regard to claim 9, both Matsumura and Irven fail to teach or suggest a method including the step of “making a preform using modified chemical vapor deposition wherein the preform is collapsed in a reducing atmosphere with a positive pressure.” Atkins does not remedy the deficiencies of Matsumura or Irven. Thus, claim 17 is patentable over Matsumura and Atkins or Irven and Atkins. Its dependent claims are patentable for at least the same reasons.

Conclusion

In view of the foregoing remarks, Applicants believe that the application is in condition for allowance. An early notice to this effect is earnestly solicited. If there are any questions regarding the application, the examiner is courteously invited to contact the undersigned at the local number below.

Respectfully submitted,

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